

In the Claims:

1. (Original) A call server comprising:

- (a) a first protocol agent for communicating with a first internet protocol (IP) telephony device according to a first IP telephony protocol;
- (b) a second protocol agent for communicating with a second IP telephony device according to a second IP telephony protocol; and
- (c) an interworking agent for providing functions usable by the first and second protocol agents to communicate with each other according to a third protocol, the functions provided by the third protocol being a superset of functions provided by the first and second IP telephony protocols.

2. (Previously Presented) The call server of claim 1 wherein the interworking agent comprises a first interworking agent component associated with the first protocol agent and a second interworking agent component associated with the second protocol agent.

3. (Previously Presented) The call server of claim 1 wherein the first protocol agent is a media gateway control protocol (MGCP) agent, the first IP telephony protocol is MGCP, the second protocol agent is an International Telecommunications Union (ITU) Recommendation H.323 agent, and the second IP telephony protocol is H.323.

4. (Original) The call server of claim 1 wherein the first protocol agent is an International Telecommunications Union Recommendation H.323 agent, the first IP telephony protocol is H.323, the second protocol agent is a session initiation protocol (SIP) agent, and the second IP telephony is SIP.

5. (Original) The call server of claim 1 wherein the first protocol agent is an International Telecommunications Union Recommendation H.323 agent, the first IP telephony protocol is H.323, the second protocol agent is a Bellcore Q.931 agent, and the second IP telephony protocol is an extension of Bellcore Q.931.

6. (Original) The call server of claim 1 wherein the first protocol agent is a media gateway control protocol (MGCP) agent, the first IP telephony protocol is MGCP, the second protocol agent is a media gateway control protocol (MGCP) agent, and the second IP telephony protocol is MGCP.

7. (Original) The call server of claim 1 wherein the first protocol agent is an International Telecommunications Union Recommendation H.323 agent, the first IP telephony protocol is H.323, the second protocol agent is an H.323 agent, and the second IP telephony protocol is H.323.

8. (Original) The call server of claim 1 wherein the first protocol agent performs originating call half functions and the second protocol agent performs terminating call half functions.

9. (Original) The call server of claim 1 wherein the interworking agent is adapted to provide a connection information parameter data structure usable by the first and second protocol agents, for communicating media capabilities and media stream management information between the first and second protocol agents.

10. (Previously Presented) The call server of claim 1 wherein the interworking agent is adapted to provide a digit information parameter usable by the first and second protocol agents for communicating dual tone multifrequency (DTMF) digits between the first and second protocol agents.

11. (Original) A method for interworking devices that communicate using different internet protocol (IP) telephony protocols, the method comprising:

(a) receiving, from a first telephony device, a first message formatted according to a first IP telephony protocol;

(b) in response to receiving the first message, generating a second message, formatted according to a second protocol, the second message including at least one of a media capabilities description and media stream management information derived from the first message;

(c) transmitting the second message to a second protocol agent; and

(d) in response to receiving the second message, generating a third message formatted according to a third IP telephony protocol, the third message including at least one of the media capabilities description and media stream management information derived from the second message.

12. (Previously Presented) The method of claim 11 wherein receiving a first message includes receiving the first message formatted according to the media gateway control protocol (MGCP) and generating a third message includes generating the third message formatted according to ITU Recommendation H.323.

13. (Previously Presented) The method of claim 11 wherein receiving a first message includes receiving the first message formatted according to the session initiation protocol (SIP) and generating a third message includes generating the third message formatted according to ITU Recommendation H.323.

14. (Previously Presented) The method of claim 11 wherein receiving a first message includes receiving the first message formatted according to ITU Recommendation H.323 and generating a third message includes generating the third message formatted according to Bellcore Q.931.

15. (Previously Presented) The method of claim 11 wherein receiving a first message includes receiving the first message formatted according to ITU Recommendation H.323 and generating a third message comprises generating the third message formatted according to media gateway control protocol (MGCP).

16. (Previously Presented) The method of claim 15 wherein receiving the first message formulated to ITU Recommendation H.323 includes receiving the first message containing H.323 fast start parameters, wherein generating a second message includes mapping the H.323 fast start parameters to a media capabilities description in the second message, and generating the third message includes mapping the media capabilities description to MGCP.

17. (Original) The method of claim 11 wherein receiving a first message includes receiving a HOLD message from the first telephony device, generating the second message includes generating a message including a connection information parameter having a mode change value for changing the mode of a media stream communication associated with the first telephony device, and wherein generating a third message includes generating a message for changing the mode of the media stream communication to inactive according to the third IP telephony protocol.

18. (Previously Presented) The method of claim 11 wherein receiving a first message includes receiving a RETRIEVE message from the first telephony device, and generating a second message includes generating a message including a connection information parameter having a mode change value of active.

19. (Previously Presented) The method of claim 11 wherein receiving a first message includes receiving a first message including at least one dual tone multifrequency (DTMF) digit value, generating a second message includes mapping the DTMF digit value to a digit information parameter value in the second protocol, and generating a third message includes mapping the digit information parameter value to a DTMF digit value formatted according to the third IP telephony protocol.

20. (Original) The method of claim 11 comprising transmitting the third message to a second telephony device configured to communicate according to the third IP telephony protocol.

21. (Previously Presented) A method for tunneling messages between protocol agents, the method comprising:

- (a) receiving, from a first telephony device, a first message formatted according to a first IP telephony protocol;
- (b) determining whether a parameter in the first message maps to a second IP telephony protocol;

(c) in response to determining that the parameter in the first message maps to the second IP telephony protocol, formulating a second message formatted according to the second IP telephony protocol; and

(d) in response to determining that the parameter in the first message does not map to the second IP telephony protocol, transmitting the first message without alteration to a second protocol agent.

22. (Currently Amended) A method for tunneling messages between protocol agents, the method comprising:

receiving, from a first telephony device, a first message formatted according to a first IP telephony protocol;

determining whether a parameter in the first message maps to a second IP telephony protocol;

in response to determining that the parameter in the first message maps to the second IP telephony protocol, formulating a second message formatted according to the second IP telephony protocol;

in response to determining that the parameter in the first message does not map to the second IP telephony protocol, transmitting the first message without alteration to a second protocol agent; and

The method of claim 21 comprising in response to determining that the parameter in the first message partially maps to the second IP telephony protocol, formulating a multiprotocol message, the multiprotocol message including a message formatted according to the first IP telephony protocol and a third message formatted to the second IP telephony protocol.

23. (Original) The method of claim 22 comprising transmitting the multiprotocol message to a second protocol agent.

24. (Original) The method of claim 23 comprising in response to receiving the multiprotocol message, dividing the multiprotocol message into the second and third messages.

25. (Previously Presented) The method of claim 24 comprising after dividing the multiprotocol message, determining whether processing of the second message is supported by the second IP telephony protocol agent, and in response to determining that the processing of the second message is supported, processing the second message.

26. (Original) The method of claim 25 comprising processing the third message.

27. (Original) A computer program product comprising computer-executable instructions embodied in a computer readable medium for performing steps comprising:

- (a) invoking a first protocol agent for communicating with a first internet protocol (IP) telephony device according to a first IP telephony protocol;
- (b) invoking a second protocol agent for communicating with a second IP telephony device according to a second IP telephony protocol;
- (c) mapping media capabilities information extracted from messages received from the first and second IP telephony devices formatted according to the first and second IP telephony protocols to a third protocol; and
- (d) transmitting message containing the media capabilities information and formatted according to the third protocol between the first and second protocol agents.

28. (Original) The computer program product of claim 27 wherein invoking a first protocol agent includes invoking a first protocol agent for performing originating call functions and invoking a second protocol agent includes invoking a second protocol agent for performing terminating call functions.

29. (Original) The computer program product of claim 27 comprising, at the first protocol agent, mapping media stream information received from the second protocol agent to the first IP telephony protocol.

30. (Original) The computer program product of claim 27 comprising, at the second protocol agent, mapping media stream information received from the first protocol agent to the second IP telephony protocol.

31. (Original) The computer program product of claim 27 wherein the first IP telephony protocol is the media gateway control protocol and the second IP telephony protocol is ITU Recommendation H.323.

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32. (Original) The computer program product of claim 27 wherein the first IP telephony protocol is ITU Recommendation H.323 and the second IP telephony protocol is Bellcore Q.931.

33. (Previously Presented) The computer program product of claim 27 wherein the first IP telephony protocol is the session initiation protocol and the second IP telephony protocol is ITU Recommendation H.323.